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REPORT OF THE JOINT ECA/ADB/WORLD BANK HIGHWAY MAINTENANCE SEMINAR II

(Abidjan, Ivory Coast, 17 to 21 June 1985)

ORGANIZATION

1. The second part of the Joint ECA/World Bank/ADB Seminar on Highway Maintenance was organized from 17 to 21 June 1985.

ATTENDANCE AND PARTICIPATION

2. The following countries were represented at the seminar:

1. Burkina Faso
2. Burundi
3. Ivory Coast
4. Djibouti
5. Guinea
6. Madagascar
7. Mali
8. Mauritius
9. Mauritania
10. Rwanda
11. Senegal
12. Seychelles
13. Zaire
14. Comoros

OPENING OF THE SEMINAR

3. In his introductory address, Dr. A.R. Moussa, Acting President of the African Development Bank welcomed the officials and delegates. He stressed the interest of the ADB Group in Road Maintenance because it is a vital economic sector which is inadequately cared for by African Governments and said he was happy that decision-makers from member Countries were being given the opportunity, for the first time to exchange views on this topical issue and develop a consensus on the most appropriate strategies to tackle the problem. He underscored the disastrous effects of inadequate highway maintenance on the national economy with particular emphasis on implication for the foreign exchange earnings and, mismatches of supply and demand of goods on the national market. He quoted some of the highway maintenance projects financed by ADB and concluded that in view of the current heavy debt burden, general economic recession in Africa, and the limited financial resources available, it has become a must for African Governments to preserve their national heritage such as their highway network.

4. Mr. Serge Guetta, World Bank representative expressed IBRD's deep appreciation of the Ivorian Government's and ADB's excellent arrangements and support for the smooth organization and running of the seminar. He also thanked ECA for their active co-operation and CIDA for its financial support. The seminar should be placed in the context of the worsening economic situation in Africa south of the Sahara, which resulted from natural calamities, man-made havoc and also in some instances inappropriate development policies. Per capita GDP has decreased compared to the seventies and will further decrease if the present trend continues. The situation calls for strenuous adjustments and reorientations of economic policies so as to reverse the trend. The continent has the necessary resources and sources of assistance to enforce adjustment measures. This remark is applicable to the transport sector

where the road network has deteriorated as a result of lack of or poor maintenance. The World Bank is prepared to assist governments concerned to remedy the present situation of the road network. The seminar is jointly organized by ADB, IBRD and ECA as a follow up to the round table held last February in Rome and to the meeting of financing sources for road maintenance held last March in London. It is aimed at evolving a consensus among senior government officials from relevant ministries, which should facilitate prompt and effective action of road maintenance.

5. In his address, the representative of the Economic Commission for Africa, Mr. Shiffaraw Bizuneh expressed his gratitude to the Government of Ivory Coast and the African Development Bank for their hospitality and to the Government of Canada and Britain as well as to the World Bank for their technical and financial support to the organization of the Seminar. He reminded the participants that independent African countries had to invest large amounts to restructure the outward looking orientation of the colonial highway network. It was regrettable that as a result of poor maintenance the network recently constructed has deteriorated. It is now time to institute effective and efficient road maintenance, using where feasible, labour intensive methods. On its part ECA alongside with interested donor countries is prepared to support policies of effective highway maintenance and is pleased to announce its forthcoming "Regional Maintenance Conference" scheduled to be held in Tunis at the end of the year. The Conference would review the ECA Handbook in Road Maintenance which had been extensively distributed. In view of the severe economic recession, desertification and internal civil strife in Africa, the current seminar on Highway Maintenance is convened at a particularly opportune time.

6. In his opening statement, the Minister of Transport of the Ivory Coast, representing the Ivorian Minister for Public Works, Construction, Post and Telecommunications welcomed all the participants to the Ivory Coast and extended special thanks to the ADB for its continued efforts towards economic and social development and training of relevant staff in Africa. He also thanked other organizations, i.e. the World Bank and the ECA.

7. The topic for discussion related to a basic principle of management which should not be neglected but rather adhered to with utmost seriousness. The approach to the problem should be systematic particularly since effective highway maintenance is a profitable exercise for countries. It was a fact that highway construction and maintenance requires large amounts of money but strict and methodic management of highways should ensure good performance of the whole highway network. Most cost effective techniques and businesslike management approaches should be used in that area. It is essential that investments aimed at preserving the national heritage in the sector of highway network should be given special priority especially in the current economic and financial context. During the last decade, inadequate resources have been devoted to highway maintenance but the trend should be reversed. Road maintenance in African countries is generally done on force account basis but recourse to contractors is developing and should be encouraged

as an effective solution and an encouragement to small-scale national enterprises. It is essential that the governments develop most effective programming and management styles to ensure optimum utilization and control of existing material, rational organization, suited to the specific conditions, and proper stimulation to ensure dynamism. The speaker invited participants to share their experiences so as to come up with the best strategies and solutions to the highway maintenance problem. He then declared the Highway Maintenance Seminar open.

Sunday

11:00 a.m. - 8:00 p.m. - Registration

7:00 p.m. - Welcome Reception

Monday

8:45 a.m. - Arrival of participants

9:00 a.m. - Opening of the Meeting

- Address by African Development Bank
- Remarks by World Bank Moderator
- Address by Economic Commission for Africa
- Address by Minister of Public Works, Ivory Coast

9:30 a.m. - Address by TRRL - Sub-Saharan Road Maintenance Crisis (R. Robinson)

There is a road maintenance crisis in Sub-Saharan Africa today, and it is growing. There may be many causes. In this seminar, we will concentrate on two broad sets of causes:

a) Inadequate levels of funding;

b) Inefficiencies in utilization of existing funding.

10:00 a.m. - Discussion

10:30 a.m. - Break

10:45 a.m. - Address by World Bank (C.C. Harral)

How much should we spend on maintenance and what are the priorities? A contribution from engineering-economic analysis:

a) Economic benefits of road maintenance

b) Optimizing road maintenance

c) Estimating financial requirements for maintenance

Monday (Cont'd)

d) Highway sector priorities under budget constraints

e) Need to link capital project planning with future maintenance demands

11:30 a.m. - Presentation by ADB "Economic and Financial Aspects of Road Maintenance" (OKETOKOUN)

12:00 p.m. - Discussion

12:30 p.m. - Lunch

1:30 p.m. - Task groups: How can we best provide finance for improved road maintenance?

a) Intra-sectoral reallocation of resources from new construction to maintenance and rehabilitation?

b) Increase inter-sectoral allocation to highways?

c) Role of foreign aid.

3:00 p.m. - Break

3:30 p.m. - Reporting from Task Groups and Discussion

5:00 p.m. - Guest lecturer

5:30 p.m. - Close

Tuesday

9:00 a.m. - Integration of Current and Capital Budgeting (L. Garamfalvi, IMF)

9:30 a.m. - Discussion

10:00 a.m. - Ways to improve budgetary control/disbursement (L. Garamfalvi, IMF)

a) Reduce irregularity of flow of funds

b) Provide easier access to foreign exchange for spare parts, fuel, bitumen, etc.

c) Role of the revolving fund

10:30 a.m. - Discussion

10:45 a.m. - Break

11:15 a.m. - Road Maintenance Budget Preparation (S. Demissie)

11:45 a.m. - Discussion

12:15 p.m. - Mr. Moussa Bako, Niger
"Applying the art of politics to forge a consensus for road maintenance'

Tuesday (Cont'd)

12:45 p.m. - Discussion
1:15 p.m. - Lunch
2:15 p.m. - Task Groups on Planning and Budgeting
3:45 p.m. - Break
4:15 p.m. - Reporting from Task Groups and Discussion
5:45 p.m. - Close
8:00 p.m. - Dinner
Address by D. Bihute, ADB Vice-President

Wednesday

9:00 a.m. - Road Maintenance Survey for West and Central African Countries (M. Mason)
9:30 a.m. - Discussion
10:00 a.m. - Break
10 30 a.m. - Choice of Organizational Form to Improve Productivity
A Panel Discussion

Country presentations:

Guinea
Ethiopia
Niger
Seychelles
Nigeria

12:30 p.m. - Behavioural Incentives for Improved Performance: Case Study from Puerto Rico
1:00 p.m. - Discussion
1:30 p.m. - Lunch
2:30 p.m. - Workshops on Organization and Management
3:30 p.m. - Break
4:00 p.m. - Reporting from Task Groups and Discussion

Thursday

Holiday

Friday

9:00 a.m. - Personnel Management and Training
9:30 a.m. - Discussion
10:00 a.m. - Equipment Management and Spare Parts

Friday (Cont'd)

10:30 a.m.	-	Discussion
11:00 a.m.	-	Break
11:30 a.m.	-	Appropriate technology and the lengthman system (Rwanda)
12:00 p.m.	-	Discussion
12:30 p.m.	-	Lunch
1:30 p.m.	-	Review of Survey Questionnaire
2:15 p.m.	-	Summary of Seminar Findings (Moderator)
3:30 p.m.	-	Close

PROCEEDINGS

Sub-Saharan Road Maintenance Crisis

9. Mr. Richard Robinson of the United Kingdom Transport and Road Research Laboratory, in his lecture on the road maintenance crisis said that in many African countries, the problem of maintaining the road network has increased at an alarming rate over the last few years. A road condition survey carried out in 1984 by the World Bank confirms the suspicion that a large proportion of the road network is in poor condition. The deterioration of the network is taking place partly because the new roads built in the 1960's and 1970's are now reaching the end of their design lives and partly because of lack of funds, shortage of trained staff and inefficient operations. The 1980-1982 world recession affected sub-Saharan Africa more severely than other parts of the world.

10. Over the whole region, a shortfall of about US$500 million a year in funding for road maintenance (mainly periodic maintenance) and a further US$300 million a year for pavement strengthening, has resulted in about one third of the value of the network being lost, some US$15 billion in all. The loss to road users in increased vehicle operating costs is of even larger magnitude.

11. Measures to save road networks from further deterioration include: (i) the concentration of resources on road maintenance, rather than new construction, and concentration of maintenance activities on the essential road network; (ii) greater use of non-government bodies in road maintenance; (iii) increasing the efficiency of government operations; and (iv) reducing the diversion of resources. In the richer countries, reduction of new construction and more efficient operations could be enough to right the situation, but in the poorer countries, outside aid will be required for some time to come to put roads into a maintainable condition.

12. In all countries, the road maintenance operation is likely to improve as a result of introducing competition and incentives, making responsibilities obvious and enforcing accountability at all levels.

DISCUSSION

13. In the discussion that followed, Mr. Coulibaly of the Ivory Coast asked whether it was considered advisable for African countries to continue to maintain their unpaved roads or borrow from donors for bitumen surfacing.

14. Mr. Robinson of the United Kingdom TRRL said it was a question of priority. Ideally countries should be self-reliant and should not have to borrow at all; but upgrading can be justifiable if there are no funds for satisfactory maintenance of the existing network.

15. Replying to additional questions, by representatives of Senegal, ADB, Rwanda and Mauritania, regarding the necessity of constructing all-weather access roads to agricultural and industrial development areas, chronically drought-prone regions, and land-locked States, Mr. Robinson said that if sufficient budgetary provision cannot be made for proper maintenance of the existing network, additions to it could only worsen the already bad maintenance situation.

How much should be spent on maintenance and what are the priorities?

16. Mr. Clell Harral of the World Bank, in his talk on the engineering-economic analysis on the benefits of road maintenance, said that more than US$10,000 million is spent each year on highway construction and maintenance by governments in the developing countries in Africa, Asia and Latin America, and the costs for vehicle operation borne by road users is a much larger magnitude, typically 8 to 10 times those borne by the government. The data do not permit one to distinguish exactly how much of government outlay is spent on maintenance and how much on new construction, but it is clear that, at least until very recently, new construction has claimed much larger resources than maintenance in most African countries.

17. In North America and Europe, high traffic volumes, high values attached to motorists travel time savings and relatively plentiful capital dictate high design standards and high maintenance standards. With several thousand vehicles per day, even minute savings in operating costs of the vehicle justify very large expenditure to maintain the road in like-new condition. Thus, until recently, very little attention has been given in the scientific literature to the problem of determining economic levels of road maintenance. But, circumstances in developing countries are different-traffic volumes are low, incomes and values attached to travel time savings are low, and above all there is a shortage of financial resources in general and foreign exchange in particular.

18. The severe competing demand for limited resources dictates that African and other developing countries pay more attention to the economic design of highways and maintenance programmes. But, how is one to estimate the economic return on maintenance outlays? What is the benefit to society of another dollar or franc spent on maintenance compared to another dollar spent on new roads? Is it more economical to spend a bit more money to construct a stronger pavement initially thereby permitting the use of larger, more economic vehicles and saving future outlays on maintenance, or, alternatively, should one follow a staged construction strategy, economizing on the initial construction but restricting vehicle axleloads and paying more in the way of maintenance and upgrading cost later on, when uncertainities about traffic growth will have been resolved? How much, or how little, should one spend to maintain paved roads and how much to maintain gravel and earth roads? Does it matter much if maintenance outlays are postponed during years of financial stringency?

19. These are important questions which have been with us for a long time - but answering them is more important than ever today. It was to answer these questions that more than 15 years ago the World Bank initiated what has since become a major programme of collaborative research on highway design and maintenance standards. Although all of these questions cannot yet be answered in a fully satisfactory, scientific manner, some very substantial progress has been made, as discussed below.

20. He then summarized some significant World Bank funding of some 20 to 25 highway projects each year. In the fiscal year ending June 30, 1977, 20 projects were approved involving Bank loans or IDA credit totalling US$650 million, which, on average, constituted about 21 per cent of the total cost of the project so that the total costs of the project constituted US$7,370 million. 1/ Substantial highways maintenance components were included in 14 of these projects, while the remaining 6 projects were constituted primarily of new construction components. An economic rate of return was calculated for 5 of the maintenance components and for all of the new construction components. The rate of return for the maintenance components averaged 86 per cent per annum with a range from 14 to 154 per cent, while the rate of return for new construction averaged 41 per cent, with a range from 13 to 119 per cent.

21. Such high rates of return should not be surprising. It is simple common sense that the annual benefit which would yield a return of 41 per cent for new road construction costing, say, $350,000 per kilometer would calculate as a much higher return on the much smaller amount of maintenance necessary to keep that road functioning reasonably well once the initial

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1/ In addition, US$103.1 million of Bank financing was made available for feeder roads costing a total of $US233.8 million through agricultural and rural development loans.

investment has been sunk. The inference that one draws - that maintenance activities tend to have a much higher economic return than new construction - is absolutely correct so long as maintenance outlays are kept as low as they have been in most developing countries. The further inference is that some shifting of funds to road maintenance even at the expense of new investment in roads or other sectors is of utmost importance if one is to obtain maximum benefit from available resources.

22. One need add only a few small words of caution. High overall or average rates of return can mask some components which individually have a much lower or even negative return when one compares the incremental cost with the incremental benefit. One such example is the regravelling of very low volume roads where local conditions make this very costly, as examined below.

23. A further and more important caveat is that maintenance activities are difficult to administer. They are notoriously prone to inefficiency, with a high percentage of the budget being used to support administration and the payrolls, and relatively little of the budget actually meeting the direct expenditure on the road itself. Is it any wonder that Finance Ministers are reluctant to see further monies allocated to highway maintenance if they see that 50 per cent or more is consumed in administrative overheads? Inevitably one is forced to ask the question, whether it is more resources which are required or simply more efficiency in the utilization of the existing maintenance budget. The correct answer, however, in the context of the very limited maintenance budget in most African countries today, is that a good measure of both is required - both more funds for maintenance and greater efficiency in their utilization. Mr. Harral then noted that others at the seminar would address the important issue of how to improve the efficiency of maintenance operations, while he would address the issue of how much money should be spent on maintenance and the relative priorities of different expenditures, assuming varying levels of efficiency in execution.

Economic and Financial Aspects of Road Maintenance

24. Mr. Oketokoun, in his presentation of the economic and financial aspect of road maintenance, said that much of the ADB Group loans in the transport sector have gone to the road sub-sector as more and more of the recipient countries are developing their highway network to provide the basic infrastructure for the social and economic development of their countries. All in all, road transport is the predominant mode of transport due to its flexibility (farm to village, village to town, market and main trunk roads) and the door-to-door movement of people and goods.

25. While the importance of an adequate road infrastructure is generally recognized, ADB's experience of late is that not much attention has been accorded maintaining the road asset to keep the roads in serviceable condition for the social and economic functions they were designed to perform. This stem from the ignorance, on the part of the authorities,

of the economic significance of road maintenance. Consequently, budgetary provision for road maintenance is minimal and inadequate. However, the point must be stressed that adequate budgetary provision is necessary for the routine and periodic maintenance of the roads, in order to preserve the capital asset and offer the serviceability upon which the original economic and technical justification was based. This amount is dictated primarily by the type of road, the topographic and climatic conditions, population and economic activities directly affected by the particular road, volume and intensity of traffic.

26. Various agencies, notably, the British Transport and Road Research Laboratory (TRRL), have carried out various researches on road maintenance in Africa and the IBRD has drawn up a computer programme on road maintenance. African countries only have to provide the necessary budgeting, and applying all the techniques of road maintenance is of such significant importance that it should be considered a national priority.

DISCUSSION

27. In the discussion that followed, Mr. Kante of Mali stated that the technical, economic and social conditions of African should be taken into account by donors when calculating rates of return of a project so as to make new construction viable and desirable. Similar assertions were made by representatives of Senegal, Burkina Faso, Madagascar, Guinea and Ivory Coast.

28. Mr. Harral of the World Bank said that while it would be difficult to satisfy the diverse economic and social interests, greater economic difficulties lie ahead and incomes will be falling. Countries cannot and should not continue to spend two thirds of available finance on new construction when the rate of return is only 10 to 12 per cent and expand their network, while the rate of return on maintenance is in excess of 100 per cent.

29. In response to a request for the definition of the term "roughness" of road surfaces, Mr. Harral said that because it was a complex phenomenon, and countries utilized different instruments, different methodology and different concepts to measure road roughness, the World Bank, together with leading road research organizations from several countries had conducted an International Road Roughness Experiment to establish a common index, the International Road Roughness Index (IRI). A joint report was being published and guidelines are coming out to assist in determining and measuring road roughness.

How can we best provide finance for improved road maintenance?

30. The meeting broke-up into three task groups to discuss the question of how to provide finance for improved road maintenance along the following guidelines:

1. What are the prospects for intra-sectoral reallocation of resources from new construction to maintenance and rehabilitation?

2. What are the prospects for inter-sectoral reallocation of resources to increase the share of the national budget allocated to the road sector for maintenance?

3. What are the prospects for increasing national budgetary resources? How can we make sure that a portion of these additional resources are allocated to road maintenance?

4. What should be the role of foreign aid in financing road maintenance?

Reports of the Task Group on Finance

31. Back in plenary, each of the three working groups reported as follows:

GROUP I

(a) This group said it recommended that the question of allocating sufficient resources should be a matter of national concern;

(b) Foreign aid for maintenance activities must be sought only to supplement local resources, and even then only for the procurement of equipment and the training of personnel;

(c) To increase the maintenance budget, tax increases, efficiency in revenue collection, better management of the maintenance budget and allocation of a larger share of road funds to maintenance was recommended.

GROUP II

32. (a) The group felt that the question of providing sufficient funds needed to be studied in depth, that the World Bank's highway design and maintenance model (HDM) needed to be modified to apply properly to African conditions:

(i) the determination of the viability of new construction projects and the criteria for upgrading an earth road to bitumen standard should not be applied uniformly to all countries. Donors themselves do not apply any such set of uniform laws when they lend money;

(ii) the basic road network should take into account the development potential of certain remote regions of a country.

(b) The current economic situation of African countries does not make possible adequate financing of road maintenance out of the ordinary budget allocations, which are usually enough to cover only salaries and a minimum of maintenance activities. The remedy in many countries is the establishment of road funds, which seem to work only for rich countries, and which are effective only if their autonomy is respected;

(c) To increase the maintenance budget, taxes need to be increased, and a greater share of the road revenue need to be allocated to maintenance. The use of labour intensive methods should be explored only if this is in accord with the national policy. All other possibilities need to be considered also;

(d) The role of foreign aid should be limited to equipment procurement and the training of staff. The Government must make efforts to finance road maintenance activities.

GROUP III

33. (a) Governments must place greater emphasis on maintenance responsibilities and protect the huge investment in the existing network; but the need to construct new roads leading to productive areas must not be overlooked. Heavier taxes for excessive axle-loads must also be considered;

(b) Maintenance deserved a greater share of the available road funds. Additional sources of funds must also be found to increase the available budget for road maintenance; but the apportionment of 2/3 of the budget to maintenance as recommended earlier, was not considered justifiable;

(c) The role of foreign aid must be sought only to preserve the existing network, and to offset the foreign cost component of the budget such as equipment and training abroad.

DISCUSSION

34. During the discussion that followed, the representative of Burundi said the increase of the maintenance budget was justifiable but the allocation of any arbitrary percentage can be applied only in the case of countries that have already built up their national road network.

35. Any premature assignment of 1/3 of available foreign aid to construction and 2/3 for maintenance could set a dangerous precedent for countries seeking assistance from donors. This was supported by the representative of Guinea, and the Ivory Coast, who added that consideration must be given to possibilities of new investment to reach isolated fertile regions which are completely cut-off during the rainy season.

36. The representative of the ADB said the idea of increasing revenue in these days of austerity was not practical; instead, consideration must be given to improving the efficiency of utilizing available funds. Another representative of the ADB said a network that is not maintained would disappear, yet it would be difficult to stop new construction.

37. The representative of the World Bank said that roads built during the 1960's and 1970's were approaching the end of their design lives, and efforts to rehabilitate them in the 1980's would rob such other important sector as education and health services of development funds.

38. Many other delegates spoke in support of more funds for maintenance on priority basis, without overlooking the need to provide access to fertile areas, land-locked countries and isolated regions.

Guest lecturer

39. Mr. Rosario of the Ivory Coast, in his talk on the organization and operation of the Highway Department, described the extent of the Ivorian primary, secondary and tertiary network, the maintenance techniques employed in each case, the cost of maintenance, and the management of the road equipment fleet.

40. He said except for minor items such as bush clearing, the majority of maintenance activities were carried out by force account methods. Performance was satisfactory and economical. He said measurement problems limited maintenance by contract.

DISCUSSION

41. Mr. Harral of the World Bank said there was a lot of movement to contract out maintenance work which many countries had found to be cheaper although it was difficult to determine the exact cost of force-account work.

42. Brazil and Argentina had experienced savings of 59 per cent and nearly 20 per cent respectively by contracting out maintenance work instead of doing it by force-account methods. He inquired whether similar comparative-cost studies were made in the Ivory Coast.

43. Mr. Rasario said it was important to first define the work to be carried out. Patching and cleaning of ditches would be difficult to measure for contract purposes, while bush clearing, and signs and markings would be easy to quantify. But, contractors would not normally be interested in small scale jobs. For the Ivory Coast, work carried out by force account has been of high quality and economical. Contract maintenance would work elsewhere, but not in all cases, he concluded.

Integration of Current and Capital Budgeting

44. Mr. L. Garamfalvi of the International Monetary Fund, in presenting his paper on current and capital budget integration, said that in some countries large-scale investment projects created a demand for budgetary resources for operations and maintenance that far exceeded the availability of resources. This led to deteriorating roads, dilapidated

schools, and hospitals without medicines. Reforms were needed in the planning and budgetary process to set up an efficient machinery of resource allocation for current expenditure.

45. There was a demand in Africa for evaluating and forecasting the impact of government investment projects on operating and other recurrent expenditures with a view to bringing about organizational improvements conducive to the integration of investment generated recurrent expenditure estimates in the planning process.

46. He described what information was required for the evaluation and forecasting of investment: (i) generated recurrent expenditures; (ii) how the information should be used in the planning process; (iii) what organizational improvements were necessary for the establishment of an information system which would provide the Ministries of Planning and the Ministries of Finance with a continuous flow of information and (vi) how to organize an efficient disbursement process.

DISCUSSION

47. In the ensuing discussion, representatives of Burkina Faso, Guinea, Burundi, Djibouti and the Ivory Coast in turn spoke up asking whether the principle of balancing budgets and forecasting expenditures were applicable to all African countries in the same manner and whether the labour force was taken into consideration.

48. Mr. Harral of the World Bank said that the distinction should be made between financial analysis as described by Mr. Garamfalvi of the IMF and economic analysis.

49. The latter differed in that, instead of the financial flow that Mr. Garamfalvi tried to explain, shadow pricing of assets were utilized to determine the economic opportunity cost of surplus labour. The World Bank has developed planning methodology that would help avoid unsound investments. The statements made to the effect that all benefits of a road are not taken into account (during appraisal) is simply not valid.

Ways to improve budgeting control/disbursement

50. The representative of the IMF, during his second lecture on reduction of the irregularity of flow of funds, provision of easier access to foreign exchange for spare parts, fuel and bitumen, and the role of the revolving fund, said that a close relationship was called for between the ministries of Planning and Finance on the one hand, and the technical ministries (executing agencies) on the other.

51. It was not uncommon for a Ministry of Finance to block disbursement altogether and withhold allocated funds during the latter months of the fiscal year. Technical ministries should not be made to suffer because of the inefficiencies of the Ministry of Finance. By the same token, Technical Ministers should improve their record of monthly cash flow requirements.

52. The establishment of a revolving fund should regularize cash flows, but that method (and the road fund) had their drawbacks. Both types need to be replenished. Tolls were also considered a possible source of road revenue.

DISCUSSION

53. In the discussion session, several delegates asked for additional information relating to the need to take political and social considerations into account, in addition to purely economic consideration, in appraising road projects. Tolls were considered impractical in some countries, because traffic volume was not high enough to justify instituting toll operation and management. There should be a link between economic and financial rates of return. Donors sometimes changed the rate of return of a highway project, in some countries (Burundi), and one country (Senegal) had established both the revolving fund and a Road Fund, but neither was very effective twhen replenishing was not affected.

54. Mr. Garamfalvi said that tolls were useful but not practicable in all cases and certainly not when the road section in question was in a state of disrepair; also the revolving fund was never meant to be fool-proof. The Road Fund was similar and may have served a useful purpose but was not fool-proof either.

55. Mr. Guetta thought there was a difference between the revolving fund and the Road Fund. The revolving fund needed to be replenished promptly, otherwise it ceased to revolve. It was an accounting system, often set up and supported by the World Bank, and it worked well in many countries. The Road Fund was not regarded in the same manner by everybody in the Bank, but is nonetheless a legal instrument and apparently works well in some countries.

Road Maintenance Budget Preparation

56. In his talk on budget preparation, Mr. S. Demissie of the World Bank said maintenance budgets needed to reflect maintenance needs on the basis of existing road conditions, desirable quality standards, and a realistic performance stadanrd. The budget must also reflect price inflation and the maintenance requirements of new roads. He cautioned participants against relying on the budget of the previous year which probably was inadequate, and against overloading the budget request with excessive details.

57. He said road conditions surveys were required to define the appropriate level of maintenance, and performance standards needed to be established to determine the resources required.

DISCUSSION

58. In the ensuing discussion, the representative of Burundi stated some countries receive only about 20 per cent of the budget they request each year.

59. Mr. Demissie said the budget preparation exercise had two advantages. The first was to convince decision makers in finance of the benefits of adequate maintenance. The other advantage was that, whenever budgets are cut drastically, the need to plan the budget becomes more vigorous.

60. Mr. Demissie said there were three steps to be taken with regard to the inadequate allocation of funds for maintenance:

- The first one is to ascertain whether funds were unavailable for

the road sector as a whole, or for maintenance only; and if construction has been alloted the greater share, reallocation must be considered.

- Next, road user charges must be reviewed and possibilities for increasing revenue explored.
- Finally, ways of increasing maintenance efficiency must be examined.

61. Responding to queries from the representative of the Ivory Coast on his views on different levels of maintenance, Mr. Harral said he agreed with the presentation made by Mr. Demissie, although the highest level of maintenance resulted in optimum benefits; and the lowest level of maintenance was generally not actually less costly in the long run. Evaluation of the various consequences of spending different amounts of money (for the various levels of maintenance) was considered helpful.

62. Responding to further queries from participants, Mr. Harral said many of the roads built in the 60's and 70's in Africa are ageing and in the next two decades material and structural fatigue will set in, and therefore maintenance costs will rise considerably. This, he said, was what decision makers and executing bodies in the road sector must plan for.

63. Replying to a statement from a participant that the Bank never finance more than 60 per cnet of foreign exchange costs for maintenance, Mr. Guetta said the World Bank is known to have financed 90 per cent, but then the Government was required to be able to take over and operate the project when it was completed, because the Bank would never want to assume the responsibilities of a State, responsibilities such as the payment of salaries of civil servants.

64. Finally, the moderator said the budget exercise was not meant to deal with how to increase the budget (which is treated under another seminar item), but with the techniques of how to prepare a good budget. He thanked the principal speaker for dealing competently with a difficult subject, and terminated further debate on the issue.

Applying the art of politics to forge a consensus for road maintenance

65. Speaking on how to mobilize political consensus for road maintenance, Mr. Moussa Bako of Niger said maintenance was the primary responsibility of a nation, and, to achieve any efficiency, techniques needed to be improved, appropriate financial management fostered, the best strategies selected mainly based on traffic volume and characteristics. It required untiring effort of road engineers and officials to explain to Government the need to finance road maintenance properly, and the consequences of postponing maintenance activities.

DISCUSSION

66. Asked how he had managed to convince Government to increase the maintenance budget (when he was responsible for roads in his country) he said it was a collective, team effort by the responsible people, who had confidence in his judgement. After all, he said, compelling economic factors were always there, and had just to be brought out in the open and discussed.

67. Responding to a question on the need to standardize differing axle loads in the West and Central African subregions he said it was a delicate long lasting process, with no easy solution in sight. Prevailing economic interests would hinder a quick solution, but efforts have been made to harmonize axle loads, at least in the Conseil de l'Entente, when he used to attend their meeting.

68. The moderator thanked Mr. Moussa Bako, and said though modest, he never lacked the courage of his conviction and then closed debate on the issue.

Task Groups on Planning and Budgeting

69. The seminar then broke up into three task group to discuss the planning and budgeting of road maintenance in accordance with the following guidelines:

1. How can closer integration of capital and recurrent budget planning best be achieved?
2. How can we reduce irregularity in the flow of funds for road maintenance?
3. How can we ensure the provision of adequate funds for spare parts, fuel, bitumen, etc.?
4. Have those countries with revolving funds for road maintenance found them helpful? How can they be improved?
5. To what extent can earmarked taxes or road funds help to solve these problems? What has been the experience of the participating countries in this area?

Reports of Task Groups

70. Back in plenary, each group chairman reported on his group's findings as follows:

GROUP I

71. (a) This group thought that to achieve closer integration of the capital and recurrent budget, rigorous planning was required at all levels to define clearly the needs and requirements of integration. To actually achieve closer integration of the two budgets, the will and involvement of political authorities was manadatory;

(b) The flow of funds must be made on a regular basis. The priority of road maintenance works must be acknowledged;

(c) The assignment of a high priority rating to road maintenance requirements was mandatory to enable it to procure spare parts, fuel and bitumen on a timely basis;

(d) The revolving fund system was considered satisfactory in the countries maintaining such funds. The effectiveness of the system depended, to a large extent, upon the ability of Government to effect prompt replenishment;

(e) The establishment of Road Funds was highly recommended, provided such funds were autonomous and could remain free from interference.

GROUP II

72. (a) This group first defined the limits of the two budgets, then decided that careful planning was required to integrate recurrent and capital budgets. It thought further that new works, upgrading, procurement of equipment, amortization of loans and recurrent expenditure all made up the total budget;

(b) Here again the concept of planning was stressed as well as the need for resources to be made available on a regular basis; a revolving fund needed to be established, to be eventually followed by a Road Fund;

(c) To ensure adequate funds, the partners in development needed to get together for a thorough discussion of the issue, on a regular basis;

(d) The existing revolving funds were considered satisfactory where replenishments were on time. Others were experiencing difficulties such as delays, inadequate finance, and a proper accounting systems. Still others thought the volume was inadequate;

(e) Based on actual experience of various countries, taxes and funds are effective and helpful only when there are adequate resources; and otherwise unreliable.

GROUP III

73. (a) This group thought that road authorities had the inherent responsibility to convince financial and budget authorities with facts that there is a real need for adequate allocation of funds;

(b) Awareness of the advantage and disadvantages is required;

(c) Provision of adequate funds for spares, etc., was primarily a treasury matter. Proper planning was required to obtain foreign exchange;

(d) Some satisfaction with revolving funds was noted by this group; care in management was required since mismanagement was possible. Accounting precaution needed to be taken;

(e) The attention of participants was drawn to the need to avoid mortgaging the fund. For the fund to be autonomous a mandate is required from higher authorities, but it could be dangerous and control can get out of hand.

DISCUSSION

74. In the discussion that followed, it was agreed that the revolving fund was generally effective although some countries such as Burundi had difficulties applying it.

75. It was further agreed that if properly justified, the renewal of the equipment fleet can be financed out of the revolving fund, or a separate depreciation reserve fund which could be financed from hire charges on the equipment use.

76. After further discussion the moderator thanked all those who contributed to the issue and closed the discussion.

Road Maintenance Survey of West and Central Africa

77. In presenting the findings of the World Bank Survey of road conditions in the West and Central African subregion, Ms. Melody Mason said that data from the survey on road conditions and current levels of strengthening and periodic maintenance indicate a serious deterioration of road networks in Africa. Already 44 per cent of classified road networks are in poor condition and a further 28 per cent are in fair condition, according to survey results. Little work appears to be carried out on preventive or restorative maintenance, for only 4 per cent of paved and 3 per cent of gravel roads were either resealed/regravelled, strengthened, rehabilitated or reconstructed each year in 1981 and 1982. If this level of activity continues roads will continue to deteriorate at an alarming rate.

78. The survey data suggest that more maintenance and strengthening could be carried out with existing funds. About half of the countries still spend over 50 per cent of road expenditures on upgrading of roads although the economic benefits of preventing the deterioration of existing roads are generally far higher than upgrading roads. Therefore, funds for upgrading need to be reallocated to strengthening and periodic maintenance activities. Economic priorities also need to be applied to the allocation of funds between periodic and routine maintenance, especially since expenditures on resealing and regravelling only averaged 17 per cent of total maintenance expenditures.

79. For about one-third of the countries surveyed, a reallocation of existing road expenditures would have little impact on the backlog of strengthening and periodic maintenance works. Therefore, unless further financial assistance is forthcoming, parts of the road network will be left to deteriorate. This situation is already occurring, for a large part of the earth road network already receives no maintenance in some countries. However, future reductions in the road network need to be carried out in accordance with economic priorities and should not occur in a haphazard way.

80. For most of the remaining two-thirds of countries, reallocation of existing road investment and maintenance funds could clear the large backlog of strengthening and periodic maintenance over the next few years. This would leave only major reconstruction and rehabilitation works to be carried out. Of course, before undertaking such a programme the economics of preventive and restorative maintenance would have to be determined for individual roads.

81. The survey results do not give clear indications of how efficiently maintenance funds are used, although there is evident that productivity of equipment is very low. Financial factors contribute to this problem, particularly the scarcity of foreign exchange for spare parts, fuel, etc. Ageing equipment fleets are also important in some cases, as is the shortage of supervisors and mechanics. But it is also true that equipment costing, budgeting and charging systems in most countries seriously understate if not ignore altogether the cost of equipment, so that economic pressures to ensure high utilization of this most expensive asset are abrogated.

82. Perhaps the most compelling conclusion to come out of the survey is that many critical management data were not provided, or were inconsistent, or clearly incorrect in some cases. Such problematic areas included estimates of the paved road network that required strengthening and periodic maintenance requirements estimates of depreciation of equipment costs and other force account costs, estimates of spare part and fuel requirements, km of grading, estimates of equipment requirements, and availability and utilization of equipment. All of these data should be readily available, accurate, and up to date if the road authority is to efficiently plan, programme, implement and monitor maintenance activities. Without such information road authority managers and aid donors have little basis for intelligent decision-making, and are simply left to grope in the dark.

DISCUSSION

83. The moderator of the seminar, Mr. Guetta of the World Bank said the finding of the survey revealed that roads were not being maintained properly, and that on average things had deteriorated since the survey was conducted in 1982. Conditions in other sectors were similar throughout sub-Sahara Africa to such an extent that the Bank was focusing special attention on the problem. He thought there were important revelations in the document and invited participants to comment.

84. The representatives of the Ivory Coast, Burundi and Burkina Faso made statements to the effect that with ageing equipment and limited resources, and the scarcity of data, it was not possible to visualize how any improvement in maintenance can be achieved; unless of course, donors were expected to assist. Beside a sovereign State had the prerogative to commandeer maintenance equipment to do emergency work or urgent assignment.

85. Mr. Guetta said the World bank has recently financed all of the maintenance equipment developing countries required, and had even made funds available for salaries in some cases. This policy change should improve the equipment and parts situation.

86. Ms. Melody Mason said countries should also make efforts to get more out of available equipment, and institute proper cost accounting systems that would reveal any misuse of public equipment. Such systematization has worked elsewhere to discourage abuse of authority, and has helped retain road equipment for road works.

87. After further discussion, during which some participants reported the establishment of a better road information system that would improve future road condition surveys, the discussion was terminated.

Choice of Organizational Forms to Improve Productivity

88. A panel discussion was then conducted where panel members in turn described different kinds of maintenance methods practiced in (a) Guinea, (b) Ethiopia, (c) Niger, (d) Seychelles, and (e) Nigeria.

1. Guinea's Second Republic has made it possible for road auth authorities to establish with the assistance of such donors as BADEA, an independent parastatal organization for road maintenance with an engineering consultant directing and guiding operation, while a control consultant was made responsible for supervision. The system functions generally satisfactorily and would be subject to review later in the year.

2. Ethiopia has introduced a payment by production system, whereby force account brigades of the road authority, under the supervision of its Contract Construction Division doubled their rate of production and were paid accordingly. The system worked to the satisfaction of the authorities and aid agencies.

3. In Niger, where local construction industry is scarce. a parastatal agency, financed by means of a special tax system has maintained a uranium mining road to the satisfaction of the mining partners.

4. In Seychelles, where over 100 islands are scattered over a million square meters of the Ocean, and labour is available but was not overly productive, the parent ministry of the road department was reorganized, a system of small parastatal contractors (competing with private contractors) was established to maintain roads on two major islands. Production had increased causing the Government to increase the road budget even more.

5. The Federal Government in Nigeria embarked upon contract maintenance when other methods failed to satisfy maintenance requirements of federal highways. With proper planning, adequate preparation of the bills of quantities and conditions of contract results of maintenance contracting have been satisfactory.

Behavioral Incentives for Improved Performance: Case Study from Puerto Rico

89. In presenting his paper on a Case Study of Management and Productivity Development in a Public Works Department, Dr. Oswald P. White, Senior Vice President of APC Skills Company, said that in January 1983, APC Skills undertook an assignment with the City of San Juan, Puerto Rico. The object of the assignment was to apply modern principles of management to certain operations of the Public Works Department, in an effort to improve the quality and volume of services provided to the public on a cost-effective basis.

90. A total of three projects were undertaken with the San Juan Public Works Department over a period of twenty-one months. At the end of 1984, by the City's own evaluation, there was dramatic improvement in the volume and quality of service provided by the Public Works Department, in all areas impacted by the projects. In addition, annual savings of some $8.1 million were being realized. The cost of all three projects was $1.125 million return of over 7.2:1 on their investment.

91. The most significant improvement, however, was in the skills and attitude of the management supervision and work force. Post test on all diagnostics administered showed marked improvement in just about all areas. Behavioral observations showed a corresponding improvement in managerial and supervisory behaviour. Absenteeism had dropped significantly. There was good compliance to installed systems and procedure. The Mayor's monthly status reports which provide summary data on departmental performance indicated that services were being maintained at levels significantly higher than the base period.

92. Over 130 supervisors and managers received formal training on the basic tenets of good management, along with individual attention and training in their respective areas.

93. A total of 5 resources groups were formed, trained and monitored to effectively identify barriers to organizational performance.

94. A total of 7 management control systems were developed. The system provide management with the information needed to plan, execute, report and evaluate the work within the departments.

95. A completely new customer service system was developed to provide satisfaction to tax payers who registered complaints with the department. Postcards are now sent out thanking the tax payer for his/her concern, and giving an estimated date of repair. The complaints are then fed into the operating systems to ensure their correction.

96. Absenteeism was dramatically reduced through a motivational programme.

97. A monthly status report, with public service indicators was developed and installed. The report gave the Mayor a clear, objective view of the Department of Public Works' performance, and the level of service being provided to the tax payers of the City of San Juan.

98. Mr. White added that people can be motivated if goals and expectations are provided. But faced with anxieties and ambiguites, they would pursue their own private goals and expectations.

Workshop on organization and management

99. The seminar broke up into three groups to discuss organization and management of maintenance in accordance with the following guidelines:

1. What are the prospects for improving the efficiency of force account maintenance operations? What specific actions can be taken to achieve this?

2. What are the advantages and disadvantages of an autonomous road maintenance agency as compared to a force account operation?

3. What are the advantages and disadvantages of executing maintenance by contract as compared to force account or to autonomous road agencies?

4. What kind of incentives could improve efficiency and productivity within these different administrative structures?

5. Would it be possible to make government forces compete with contractors for the execution of certain maintenance operations? What would be the consequences of such an approach?

100. Back in plenary once again, each rapporteur presented the findings of his group as follows:

GROUP I

101. (a) The first group defined the priority network, which would fulfill national objectives (such as food self-sufficiency for instance),

with good remuneration and a good classification system. The management system should ensure supply of funds for preventive and regular maintenance. It should institute a proper financial procedure.

102. (b) This group also considered both the financial autonomy and structural autonomy requirements of a road maintenance agency; and agreed that autonomy would provide the agency with functional flexibility and administrative and financial independence. The disadvantages are that it would be difficult to control an autonomous agency.

103. (c) The group made a distinction between routine and periodic maintenance, and said the former (clearing bushes, cleaning ditched and structures) would not be easy to quantify (measure) and entrust to contractors. It further agreed that options were not really that clear-cut, that both alternatives (contract and force account) were acceptable and desirable since the important issue was to get good performance irrespective of the method utilized.

104. (d) In dealing with incentive requirements, the group felt delegation of authority and responsibility, motivation of staff, providing security to staff and improving management and accounting systems, were essential.

105. (e) The following observations were made as regards healthy competition between force account forces and maintenance contractors: (i) Private contractors were required for the purpose of comparing unit costs of maintenance; (ii) Both methods should be used and encouraged to compete with each other to improve output and compare performances; (iii) Encouraging employment of contractors in road maintenance should improve the development of the local contracting industry.

GROUP II

106. (a) This group defined the problems encountered in improving road maintenance performance, by contract or force account methods. Road inventory and classification was important, and the establishment of road data banks would facilitate proper maintenance. Work must be properly programmed, accurately defined; and objectives set. Adequate resources must be made available. Control and follow-up was essential. Social and political pressures must be reduced to preserve an atmosphere of independence and autonomy.

107. (b) This group first discussed the implications of structural and financial autonomy, and then said that the principal advantage was the flexibility of management that "autonomy" offers. It listed disadvantages as the possibility of directing funds from maintenance to other activities, and the inability or unwillingness to provide sufficient funds for autonomous organization.. The values of an autonomous agency diminished with time, as the novelty wore off.

108. (c) To properly understand the advantages between contract and force account maintenance, a distinction must be made between routine and periodic maintenance. This Group emphasized:

(i) Routine maintenance was not available in large quantities to attract medium size and bigger contractors; there was also the problem of measurement and establishment of definite "pay items", thus contractors could inflate the amount of work carried out.

(ii) On the other hand periodic maintenance was more suitable for contract maintenance, it can be performed more efficiently. Here again, some difficulties could be encountered in controlling the quality of work.

109. (d) The group thought the reasons given in "b" above applied, as far as incentives were concerned. (The moderator thought the group should have been more explicity).

110. (e) The group thought it was not necessary for government forces to compete with private contractors (or vice versa), since they were complementary to one another.

GROUP III

111. (a) This group said that efficiency of autonomous agencies can improve only when flexibility in management was made available through genuine autonomy with efficient accounting and control systems. Agencies would then need to rigorously programme their work, and operate their equipment fleet more efficiently. Staff would need to be motivated, with bonuses and healthy competition between teams. Strict discipline must be observed. Political pressures must be resisted as much as practicable.

112. (b) The advantages of an autonomous agency were flexibility of management, regular cash flow, timely payment of salaries, and to suppliers, autonomous management and better planning of works. The disadvantages included risks of embezzelement and waste, irrational use of staff, more outside work, job suppression and layoffs. The autonomous agency was preferred, but the risks involved had to be acknowledged.

113. (c) Contracting of periodic maintenance was simpler since jobs could be easily: (i) tendered, (ii) controlled, and (iii) paid for on time. It avoided delays, it was cost-effective and even then it can be expensive since quantities of emergency work are not easily determined, (when executed on unit price basis).

114. (d) (i) For contract maintenance to survive, work must be made available on a continuous basis, otherwise contractors scatter and disappear, and may not be readily available for new projects.

(ii) No competition was recommended between the different methods, but road administrations can serve as a buffer zone between contractors and autonomous agencies (to improve efficiency and cost-effectiveness).

(e) Governments must have their own forces to fend off high contract costs, blackmail, and determine real unit prices. The State must be in a position to select the projects to be assigned to contractors.

DISCUSSION

115. The moderator requested for additional comment from the floor to clear any confusion.

116. Mr. Coullibaly of Mali, Mr. Coullibaly of the Ivory Coast, and Mr. Sid Ahmed of Mauritania spoke in turn to support, in general, desirability of utilizing contractors for periodic maintenance, limited but constructive competition between contractors and government forces, publicizing sufficiently the impact of maintenance contractors on the economy, and the desirability of labour intensive road maintenance in certain regions.

117. Mr. Cissé of the World Bank, in summarizing the consensus reached, said that:

(1) All three groups agreed there was room for improvement of the direct labour method for road maintenance;

(2) All appreciated the difference between financial and structural autonomy;

(3) All groups analysed the advantages and disadvantages of contracting, while routine maintenance work may be difficult to quantify;

(4) There was also an agreement on the kind of incentive required to improve efficiency;

(5) There was also general agreement on the need to provide the proper environment for competition between the various forces.

Winding up discussion on this subject, Mr. Harral of the World Bank said that in recent years some countries that have experimented with contracting of routine maintenance have found it to be successful.

Personnel Management and Training

118. In his talk on an approach to manpower development for transportation organization within the framework of its improvement or development, Mr. Jean-Michel Verdier of the Education Department of the World Bank said that in the Transportation Sector as in any other, managers should concentrate their activities on finding and implementing solutions to the two following questions: (a) How can the performance of the organization be improved? (b) How can the organization be developed? Certainly the future of any private enterprise - its bankruptcy, survival, or development - depends on the solutions implemented by its manager.

119. Although a Ministry of Public Works, a Port or Railway Authority is never allwed to go bankrupt, the consequences of its poor performance are even more serious than in a private enterprise: the slow or negative development of the country and wasting of public funds.

120. The purpose of the guidelines presented by Mr. Verdier is to provide a step-by step approach to manpower planning and development for a Ministry of Public Works, or Port or Railway Authority. The approach is part of a general study and implementation of a solution aimed at improving or developing and organization.

121. The flow-chart is usually used for this approach and when using such a flow chart, it should be borne in mind that:

(a) this approach is valid whether the problem is to improve the whole organization or only a part of it;

(b) the expertise required to study the improvement or development of an organization and to implement the approved action plan depends on the focus: the organization as a whole or only a function or a department. But generally the study requires the intervention of different types of specialists such as specialists in management, economists, engineers, financial analysts, and specialists in human resources;

(c) whereas the study for the improvement or development of an organization may be performed in a limited time, the implementation part may involve much more time because it will require reassignment, transfer of personnel, training activities and also changes in the behaviour of groups and individuals;

(d) because the approach is a continuous process, if the management system of the organization is second (data collection, analysis of the results, study and implementation of measures aimed at improving the situation), the work required to improve or develop an organization will be greatly reduced;

(e) the process presented in the flow-chart should not be performed occasionally but should be one of the permanent activities of the managerial staff of the organization.

DISCUSSION

122. In the ensuing diccussion the representatives of ADB, Djibouti, Burkina Faso, Guinea, Mali and the Ivory Coast made interventions in turn to the effect that: (a) Public Works organizations were among the oldest government ministries, with a lot of people that, as a rule, were not responsive enough to training efforts. Project-related training was considered particularly useful for developing countries, Training programmes are not as successful as one wished them to be. A World Bank survey on the impact of manpower training would indeed be useful.

123. Mr. Harral said that the World Bank has recently evaluated project-related training, (because of the Bank's concern that its training programme may not have been very effective), and the result left a lot to be desired. Any suggestions from participants would help improve the training policies the World Bank is pursuing.

124. There was a statement from the floor that some times donor personnel on field missions prefered to discuss matters with donor experts completely ignoring the local official in charge (as well as the expert's counterpart), thus undermining his authority. At times experts consider their counterparts as rivals and do not share pertinent information with them.

125. The moderater said that such behaviour should be considered intolerable; and should be exposed. He supposed that at times donor personnel went straight to the person that would very likely supply them with quick and satisfactory reply, but the negative effect of such action is damaging and should not be allowed.

Equipment management and spare parts

126. In his talk on equipment management, Mr. Peter Morries of the World Bank said that of the total road maintenance cost, about 1/3 went to the cost of spare parts, tyres, fuel and bitumen, and another 1/6 to the cost of owning such equipment. The mismanagement of equipment made it much expensive for developing countries to own and operate modern equipment. Equipment management should be organized along commercial lines. The Bank was prepared to assist countries to improve equipment maintenance and operation.

Country report - Zaire

127. The representative of Zaire informed participants that his country has established an autonomous equipment management agency that was functioning satisfactorily. The organization was responsible for

daily and periodic maintenance of the equipment, which was scattered all over the country under 12 regional centres.

DISCUSSION

128. In the ensuing discussion participants stated that while donors helped procure equipment and parts, their international competitive bidding (I.C.B.) method had continued to frustrate their efforts to standardize equipment. One country (Burkina Faso) had 62 different brands of equipment, which it said was problematic to maintain.

129. Mr. Harral said a major study launched by the World Bank has revealed that the economic waste associated with equipment mismanagement exceeded the World Bank's total funding in Africa. The low availability and utilization of equipment necessitates that countries in Africa seriously consider the establishment of autonomous equipment management systems like Malawi and Cameroon, where such systems have been adopted and are functioning satisfactorily.

Appropriate technology and the lengthman system

130. The representative of Rwanda informed the seminar that his country has adopted the lengthman system to maintain earth and asphalt roads, and that the system was functioning satisfactorily. The country had a lot of excess labour scattered all over the country and the Government's policy of (a) a national service system and (b) civil service salary scales have ensured a steady supply of active labour. Mechanized brigades assisted the lengthman system whenever required.

DISCUSSION[2]

131. In the discussion that followed, the representatives of the Ivory Coast, ADB, Guinea and Madagascar made statements to the effect that the lengthman system needed an incentive policy to motivate labour, and that technical problems were at times beyond the comprehension of the lengthmen.

132. The representative of Rwanda said there were inspectors and supervisors to deal with any technical problems; salaries were established by the Central Government.

Review of Seminar questionnaire

133. Ms. Melody Mason said the road condition survey carried out throughout Central and West Africa indicated that networks were deteriorating very badly, to such an extent that some of the responses may not reflect the true picture in African countries.

134. Participants raised the issue that the design of the questionnaires may have made it impractical and called for some revision

135. Mr. Harral discussed the questionnaire with participants in some detail and said he would send a revised questionnaire to countries. Replies can then be discussed at the forthcoming Fourth African Highway Maintenance Conference of the ECA.

CONCLUSIONS OF THE SENIOR MANAGEMENT SEMINAR ON ROAD MAINTENANCE IN AFRICA

This seminar jointly organized by the World Bank, the African Development Bank, the Economic Commission for Africa and the Canadian International Development Agency, brought together senior managers from the ministries of Public Works, Planning and Finance of Twelve African countries. The main objectives were to discuss the planning, financing and management of road maintenance. The principal purpose was to provide the participants an opportunity to become fully aware of current problems in road maintenance in various countries and to seek appropriate ways to improve the present situation.

From available data it is obvious that the road networks of sub-Saharan Africa have been deteriorating rapidly for several years. In 1982, only 28 per cent of the roads were in good condition, while 44 per cent were in poor condition. Current levels of maintenance activity indicate that the situation is probably worse at the present time. To restore the road network to an optimal condition would require a very considerable investment currently estimated at about 15 billion US dollars for all sub-Saharan Africa countries.

A serious debate and a useful exchange of experience among the participants (African managers and representatives of donor institutions) led to agreement on the seriousness of the situation and to the following conclusions.

A. Analysis

A detailed examination of the present situation showed that the basic causes of the current problems are:

1. Inadequate funding for road maintenance,
2. Inefficient utilization of available funds and resources.
3. Lack of understanding of the importance of road maintenance
4. Lack of trained and experienced personnel at all levels.
5. Lack of incentives for maintenance staff.
6. Lack of skill in the field of road management system.

B. Conclusion

The conclusions of the seminar center around two main themes: road maintenance financing, and the organization and management of road maintenance.

1. Financing

The improvement of road maintenance requires:

- preparation of multi-year programmes reflecting maintenance needs, based on the definition of a priority network in relation to the economic requirements of national development.

- provision of an adequate budget for the selected network.

- assurance of the regular availability of funds exclusively to meet road maintenance needs.

- This would require:

- a better distribution of the funds allocated to road investments in favor of maintenance.

- allocation of an adequate share of tax revenues to the maintenance budget, and an increase wherever they are not sufficient to cover maintenance needs.

- setting up sufficiently flexible financial management structures so that the available funds can be used efficiently (creation, continuation or improvement of Road funds, establishment of revolving funds, etc.).

- seeking external assistance to complement national efforts, especially to obtain needed foreign exchange.

- greater co-ordination of sector strategies and programmes among the different donor institutions.

2. Organisation and management

Improvement in the present situation will require:

- greater political will to consider road maintenance as a priority activity.

- increased autonomy for the management of road maintenance organizations in particular for personnel management, procurement and day-to-day operations.

- implementation and development of incentives for more efficient performance.

- promotion of increased competition between the different modes of maintenance execution, giving a larger place to private contractors.

- establishment and improvement of equipment management systems, personnel management systems, management information systems and performance monitoring systems.

3. Road maintenance survey data

Reco nizing the importance of a data base for road maintenance the participants agreed to complete a revised road maintenance questionnaire to be sent to the World Bank before the end of August.

Closing of the seminar

The representative of the ECA, Mr. Shifarraw Bizuneh in his closing statement, thanked participants for contributing to the success of the seminar. It was the end of yet another effort to promote the cause of effective road maintenance in Africa, he said, which has brought together responsible people in maintenance under one roof, to exchange opinions and experiences among themselves and with prominent and knowledgeable international personalities.

This sort of seminar needed to be repeated over and over again he said, if the cause of proper road maintenance is to get across to African decision makers, if the fact that postponement of maintenance will cost much more later on is to reach policy-makers in planning and finance, and if the advantages of new methods such as contracting out of road maintenance activities to private local enterprises is to be appreciated by road authorities.

He then thanked the African Development Bank, the World Bank, the Canadian International Development Agency, the International Monetary Fund and the U.K. TRRL for everything they had done to support the seminar.

He also thanked all those who travelled many miles to share their wealth of knowledge and very valuable experiences with the group; and all those who worked behind the scene, sometimes past their normal working hours, and contributed to the success of the seminar.

He singled out the key people who he said left an impact on the seminar,

First, he said, was Mr. Aithnard for making their stay comfortable and pleasant, for his excellent administration ability and exemplary conduct.

He then mentioned the Chairman who, he said, in a very short time got the heart of the matter, and skillfully, competently and passionately led the conduct of this meeting.

Finally, he paid tribute to Mr. Clell Harral, who had dedicated many years of active life to road maintenance, and who had played the leading role in mobilizing a very impressive team of leading experts in the field round maintenance, to enrich the quality of the seminar.

He ended his brief statement by extending the ECA's invitation to the next major event, the FOURTH AFRICAN HIGHWAY MAINTENANCE CONFERENCE tentatively scheduled for 1985 or 1986 at Tunis.

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2nd Session: 17 to 21 June 1985

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